

WHAT IS CLAIMED IS:

1. A non-rotary cutting tool which is to be moved relative to a workpiece in a predetermined direction for cutting the workpiece, with a rake face thereof being held substantially perpendicular to said predetermined direction, said cutting tool comprising:

a generally cylindrical shank portion; and

a generally semi-cylindrical body portion which is coaxial with said cylindrical shank portion and which has an outer circumferential surface constituted by said rake face and a semi-cylindrical surface,

wherein said semi-cylindrical body portion has a cutting edge which is provided by an edge of said rake face and which is covered with a diamond coating.

2. A non-rotary cutting tool according to claim 1, wherein said cutting edge includes a side cutting edge portion and an end cutting edge portion which are contiguous to each other,

wherein said side cutting edge portion is defined by an intersection of said rake face and said semi-cylindrical surface, while said end cutting edge portion is defined by an intersection of said rake face and an axially distal end face of said semi-cylindrical body portion,

and wherein at least one of said side cutting edge portion and said end cutting edge portion of said cutting edge is

covered by said diamond coating.

3. A non-rotary cutting tool according to claim 2, wherein said side cutting edge portion and said end cutting edge portion of said cutting edge intersect with each other at a corner which is so sharp that said corner has a nose radius of curvature of not larger than 0.05 mm.

4. A non-rotary cutting tool according to claim 1, wherein said diamond coating has a surface smoothed to have a surface roughness R_z of not larger than 1.60 μm .

5. A non-rotary cutting tool according to claim 2, wherein at least one of said side cutting edge portion and said end cutting edge portion of said cutting edge is so sharp that a radius on each of said at least one of said side cutting edge portion and said end cutting edge portion is not larger than 0.03 mm.

6. A non-rotary cutting tool according to claim 2, wherein said side cutting edge portion of said cutting edge has a high degree of parallelism with respect to an axis of said cylindrical shank portion such that an error in said parallelism is not larger than 3 μm ,

and wherein said end cutting edge portion of said cutting edge has a high degree of perpendicularity with respect to said axis of said cylindrical shank portion such that an error in

said perpendicularity is not larger than 3 μm .

7. A non-rotary cutting tool according to claim 1, wherein said cylindrical shank portion and said semi-cylindrical body portion are provided by a single piece.

8. A non-rotary cutting tool according to claim 1, wherein said rake face is provided by a flat surface which is elongated in an axial direction of said semi-cylindrical body portion and which has a width smaller than a diameter of said cylindrical shank portion.

9. A process of machining a scroll member of a scroll compressor which has a base plate and a scroll wall extending from the base plate in a direction substantially perpendicular to the base plate, by using a non-rotary cutting tool comprising (a) a generally cylindrical shank portion, and (b) a generally semi-cylindrical body portion which is coaxial with said cylindrical shank portion and which has an outer circumferential surface constituted by a rake face and a semi-cylindrical surface, wherein said semi-cylindrical body portion has a cutting edge which is defined by an edge of said rake face and which is covered with a diamond coating,

said process comprising:

a step of moving at least one of said non-rotary cutting tool and said scroll member relative to the other in such a direction that permits the scroll wall and the base plate to be

machined by said cutting edge, while holding said rake face substantially perpendicular to said direction.

10. A process according to claim 9,
wherein said cutting edge includes a side cutting edge portion and an end cutting edge portion which are contiguous to each other,

and wherein the scroll wall and the base plate are machined by said side cutting edge portion and said end cutting edge portion of said cutting edge, respectively.